

Remarks

Reconsideration and withdrawal of the objections to the specification and rejections of the claims, in view of the amendments and remarks herein, is respectfully requested. Claim 34 is added. Claims 1-34 are now pending in this application.

New claim 34 is supported by originally-filed claim 15 and at page 5, line 11, and page 12, lines 11-14 of the specification.

Applicant respectfully requests that a copy of Form 1449, listing all references that were submitted with the Supplemental Information Disclosure Statement filed on March 8, 2002, marked as being considered and initialed by the Examiner, be returned with the next official communication.

The specification is amended at pages 8 and 45 thereby addressing the Examiner's objections to the specification at page 2 of the Office Action.

The Examiner rejected claim 9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner asserts that the term “engrailed” is indefinite. This rejection is respectfully traversed.

Claim 9 is dependent on claim 6, which is dependent on claim 1. Claim 9 is directed to an isolated synthetic peptide or polypeptide comprising a domain which specifically binds a nucleic acid sequence and a domain which specifically binds a metal which is hydrolytically or redox active, wherein the domain which specifically binds nucleic acid is a domain from the transcription factor engrailed.

It is Applicant's position that the term “engrailed” is understood and conventionally used in the art. As evidence that the term “engrailed” is understood and conventionally used in the art, the Examiner is respectfully requested to consider the abstracts for Mainguy et al. (J. Invest. Dermat., 113:643 (1999)), Han et al., (Mol. Cells, 10:728 (2000)), and Wenner et al., (J. Neurophysiol., 84:2651 (2000)) (a copy of each is enclosed herewith) which indicate that engrailed is a homeoprotein associated with transcription, and that it contains a homeodomain.

Hence, withdrawal of the § 112(2) rejection is respectfully requested.

The Examiner rejected claims 1-2, 4-18 and 27-29 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention and in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These rejections are respectfully traversed.

In particular, the Examiner asserts that 1) it is not clear on page 50, line 27 what sequence P3 has or what residues are at positions 27, 34, 42, and 57 of P3; 2) it is not clear how residues at one position can be substituted for another, e.g., A₄₃→R₍₁₉₎ at page 50; 3) the identity of the engrailed homeodomain in P3 is not clear; 4) the markings on Figure 2 do not correspond to the description at page 51, lines 5-7; 5) there is a discrepancy between the description for Figure 8 at page 10 and at page 56, lines 12-14; 6) the specification does not teach that the DNA binding domain and the metal binding domain are the same or show that the peptide specifically binds a nucleic acid; and 7) the specification is only enabled for EuP3, EuP4a, and Eu/EuP5L.

With respect to 1)-3), Figure 2 provides the sequence of P3, which has 33 residues, and indicates whether the sequence is from engrailed (double underline) or EF-hand (single underline). The engrailed homeodomain is well known to the art (see, for example, NCBI Accession No. B25682, where the homeodomain in *Drosophila* engrailed includes residues 487 to 543; NCBI Accession No. A48423, where the homeodomain in murine engrailed includes residues 313 to 369; and NCBI Accession No. NP-001417, where the homeodomain in human engrailed includes residues 303 to 362 (a copy of each is enclosed herewith). Note that residue 27 of the homeodomain in human engrailed is T, residue 34 of the homeodomain in human engrailed is L, residue 42 of the homeodomain in human engrailed is E, and residue 57 of the homeodomain in human engrailed is K.

The specification discloses that the first 8 residues of P3 are from the α 2 helix of engrailed (TERRRQQL, i.e., corresponding to T₂₇-L₃₄ of the engrailed homeodomain) and the last 16 residues of P3 are from the α 3 helix of engrailed (ERE...KIK, i.e., corresponding to E₄₂-K₅₇ of the engrailed homeodomain) (page 9, lines 1-2 and page 50, lines 25-28). Moreover, the residue at the position in P3 corresponding to position 43 in a homeodomain is disclosed as the residue at position 43 in the Antennapedia homeodomain, i.e., R (see NCBI Accession No. P02833, where the homeodomain includes residues 297 to 356; a copy is enclosed herewith).

Thus, the numbering in Applicant's specification adequately describes and enables the claimed invention.

The specification is amended at pages 51 and 56 to address 4) and 5).

As for item 6), the specification discloses that the synthetic peptide or polypeptide of the invention includes a nucleic acid binding domain and a metal binding domain, and that the metal binding domain may be embedded in a nucleic acid binding domain (page 5, lines 8-10 and Figure 2). It is also disclosed that DNA gel shift assays showed that the metallated peptide of the invention bound a plasmid with at least 11 partial target sequences for engrailed, while a control peptide did not (page 54, lines 21-24 and page 55, lines 9-10).

With respect to 7), the Examiner is requested to consider Kovacic et al. (J. Am. Chem. Soc., 125:6656 (2003)), Caravan et al. (Chem. Comm., 21:2574 (2003)), and Sirish et al. (J. Inorg. Biochem., 91:253 (2002)) (a copy of each is enclosed herewith) which disclose metal complexes with peptides of the invention other than EuP3, EuP4a or EuP5_L, e.g., CeP3W, EuP3W, CeP4, EuP4 and GdP3W.

Accordingly, withdrawal of the § 112(1) rejections is respectfully requested.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6959 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

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December 23, 2003

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 23 day of December, 2003

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